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Short on Feed? Should you … Move the Feed to the Livestock, or the Livestock to the Feed?

Martin K. Beutler
South Dakota State University

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Short on feed? Should you . . .

Move the feed to the livestock, or the livestock to the feed?

Martin K Beutler, ranch economist

With drought severely curtailing pasture and hay production over much of South Dakota, many ranchers are faced with either buying feed or moving their livestock to feed if they want to retain ownership of their animals. Which alternative to choose depends on the economics of the alternatives. This Extension Extra provides a worksheet for you to evaluate your particular situation.

The first step is to determine the cost of putting purchased feed in the feedbunk. This is the sum of the (1) purchase cost of the feed, (2) shipping costs, (3) opportunity cost of labor in feeding and caring for the animals, and (4) shrink and waste.

The second step is to determine the cost of moving the animals to a feed source and paying for their feed and care there. This is the sum of (1) shipping the animals to and from the feed source, (2) the cost of the feed at the feeding facility, and (3) the daily charge by the feeder to care for and feed the animals.

Example calculations

Suppose a rancher wants to continue owning his cattle but is short on feed. He estimates it will be 9 months before the ranch can again support the herd, given normal rains next year.

If each cow needs about 30 lb hay per day to maintain her, it will take about 8,100 lb, or nearly 4.1 tons, of hay to maintain her for 270 days, the 9 months. If good hay can be purchased at $85 per ton, the total cost of the hay will be $348.50 per animal.

Shipping charges to transport the hay to the ranch will have to be added in.

With a freight charge of $2.90 per loaded mile and assuming that the hay is 300 miles away, the cost will be $870 per load. Assuming 22 tons per load, the freight cost is $39.55 per ton or $162.16 for 4.1 tons. Thus, the total cost for the hay delivered to the ranch is $510.66 per animal for the 9 months.

This example assumes that there is less than 75 lb of wasted hay per day and that the rancher has no opportunity cost for labor.

Another alternative the rancher has is to ship the cattle to a feeder 300 miles away for the 9 months.

If the price of the hay is the same at the feeder's lot, the cost of the feed will be $348.50 per head. However, there will be freight for moving the cattle to and from the feeder's facilities. The average custom rate for hauling cattle is about $3.25 per loaded mile, with 40 cows per load.

Thus, a round trip cost will be $48.75 and the total cost of hay and hauling cattle comes to $397.25 per head for

Authors of previous ExEx5041: Donald L. Peterson, Extension economist (ret.) and Barry Dunn, former Extension range livstock specialist, now executive director of King Ranch institute for Range Management.

the 9 months. If the feeder charges $.22 per head per day for water, utilities, and labor, the total cost will be $456.65 per head for the 9 months, or $54.01 less than the cost of moving feed to the cattle.

These are examples. You must figure the costs pertinent to your own situation, being aware that the purchase price of feed and the shipping distance for the cows and hay may not be the same in real situations.

Some custom feeders include feed in their daily yardage charge. When feed is included in the yardage charge, the charge will be about $1.10–$1.70 per head per day. At $1.35 per day, the cost of boarding the cattle (feed, water, management, etc.) will be $364.50. After adding $48.75 for shipping, the total cost is $413.25 per head for the 9 months, with an added charge likely if the spring calves are born at the feeder's facility. These prices may vary with changing prices for feed.

A third alternative is to ship the cattle to where there is pasture available.

The costs associated with this would include the shipping charges in the previous example of $48.75 per head to move the cattle to and from the alternative pasture plus the cost of the pasture at $270 per head, (assuming pasture grass is available for $30/AUM x 9 months) plus any additional charges for medicines, water, fencing repair, labor, management, etc. as agreed upon between the landowner and herd manager.

This option may or may not be available in a given drought year. Depending upon how widespread the drought is, there may not be sufficient available pasture in a given region to satisfy demand.

Other considerations

Labor costs. The opportunity cost of labor on the ranch was not included above. If, by moving the cattle to a feeding facility the owner can use his labor in another income-producing capacity, then the opportunity cost of not engaging in the alternative activity must be added to the cost of purchasing and hauling feed if the choice is to keep the cattle and bring the feed. The same would apply to hired labor, tractor use and fuel, etc. that can be avoided by boarding the cattle elsewhere.

Purchasing nutrient dense feeds. Purchasing a feed high in nutrients, such as corn, may be a viable alternative for a rancher with some, but not sufficient, hay or pasture.

Because of the higher energy value in a feed like corn, the transportation cost per unit of feed value is less. Corn can be substituted for prairie hay (47% TDN) at a ratio of 0.534 lb corn for 1 lb prairie hay on a 100% dry-matter basis. Barley can be substituted at a ratio of 0.588:1, oats at 0.618:1, and sorghum and ear corn at 0.588:1.

Thus, on a dry-matter basis with hay at $85 per ton, corn is worth $7.96 per hundred pounds as a substitute feed ($85.00/2000/0.534) x 100=$7.96 per cwt. The substitution rates for alfalfa at 55% TDN are: corn 0.625:1, barley 0.688:1, oats 0.724:1, sorghum 0.688:1, and ear corn 0.688:1. It takes more grain to substitute for a pound of alfalfa than for prairie hay because of the higher feed value of alfalfa.

Tables 1 and 2 show the breakeven prices for grains at various hay prices. They are based on "as fed" values rather than dry-matter basis as are the substitution values above.

These numbers provide a rough guide only. There is more to feeding than looking at TDN numbers.

Protein, vitamins, and other nutrients must also be considered as well as the cost of the equipment that would be required to feed an adequate ration (i.e. feed processing, delivery, feedbunks, etc.). Also, substituting grain for roughage in the ration can lead to feeding problems. Consult your county Extension educator or ruminant nutritionist for guidance.

Know the seller or inspect what you are buying. When buying feed to be shipped to the ranch, use a hay dealer with a solid reputation or inspect the hay at point of sale before buying. Watch for undesirable weeds or other materials that could be included in the bale.

Likewise, it is imperative to visit a potential feedlot operator prior to moving any cattle. Have a written contract that specifies the quality of feed, amounts, prices, and other considerations such as death loss and veterinary expenses. Also reserve the right to inspect your cattle at any time.

Water availability. Is there sufficient water at the ranch to maintain the animals? If not, that may mean the cattle must be moved or water hauled to the animals, adding to the cost of feeding at home.

Feed waste. Feed waste can be costly. In some cases, as much as 20% or more of fed hay is wasted, adding

considerably to feed costs. Feed processing equipment can be effective in reducing feed waste; however, this will increase the cost of providing the feed.

Of course, feed also could be wasted at a custom feedlot. However, if the daily yardage charge includes feed, the feeder is encouraged to minimize feed waste, as that will be coming out of his profits, whereas if the rancher is paying for the feed plus a yardage charge, there is less incentive to control waste.

Death losses. Death loss is another item that must be considered when a custom feeder is used. Who will pay for any death loss? Will all death losses be shared or will the animal owner bear all losses up to a predetermined amount and the feeder bear all or part of any losses in excess of that?

Probably the most fair is for the owner to stand "normal" death losses, with the feeder sharing part, if not all, of any excess losses to prevent negligence on the feeder's part. The same logic can be applied to veterinary expenses.

Shipping costs. South Dakota 2004 Custom Rates[1] indicate that the average rate for hauling hay is $2.85 per loaded mile for a load over 20 tons and $3.10 for a 10-20 ton load, but there is a wide range of rates charged. A rancher with a truck could likely do it for less, because he needs to cover only his variable costs. Other costs, such as insurance and license, will already have been paid.

The average custom rate for hauling cattle is $2.72 per loaded mile. Again, the range of reported rates is very wide. It pays to shop around for a trucker. However, make sure any hired trucker is properly licensed and insured in case of an accident and the cargo is lost or injured.

Fuel costs have increased dramatically over the last few years (U.S. diesel fuel prices have risen from about $1.85 per gal in August 2004 to over $3.05 per gal in August 2006[2]) Therefore the figures quoted above may be below what should be used currently. Check with local shippers to get up-to-date quotes.

Expected length of the drought. How long the drought will last is a critical and difficult question to answer. In the example above, it was assumed that the ranch could support the herd again in 9 months.

If it turns out that the cows must be sold after feeding them for 9 months, keeping the cattle results in roughly $450 or more per head in expenses that could have been avoided.

The cow owner is in the same situation as someone with money invested in a falling stock market: "Should I sell my stock now to minimize future losses or should I try to ride it out?" Each operator must evaluate his/her own risk-bearing ability, alternatives, and outlook.

A compromise of selling down part, or all, of the herd may be the best way to avoid future losses. In this situation the value of herd performance records would be useful to identify those cows which should be sold and which to keep.

After considering what could happen under different circumstances, choose the best single or combination of alternatives that give you the best chance of saving the most equity.

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1 See USDA-NASS South Dakota 2004 Custom Rates: South Dakota Agricultural Service / PO Box 5068 / Sioux Falls SD 57117-5068. ph: 605-330-4235. The report also is available on the Internet at http://www.nass.usda.gov/sd

2 Energy Information Administration / EI30 / 1000 Independence Ave SW / Washington DC 20585.

This publication can be accessed electronically from the SDSU College of Agriculture & Biological Sciences publications page at
http://agbiopubs.sdstate.edu/articles/ExEx5041.pdf
or from the Extension Service Drought Information Website at http://sdces.sdstate.edu/drought/

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Table 1. Breakeven values for selected grains at various prairie hay prices for beef cows at specified TDN and moisture levels.

Cost of prairie hay per ton	Corn/bu	Oats/bu	Barley/bu	Milo/cwt	Wheat/bu	Ear Corn/ton
30	1.52	1.17	0.77	2.50	1.59	49.93
40	2.03	1.56	1.02	3.33	2.12	66.57
50	2.53	1.95	1.28	4.16	2.65	83.22
60	3.04	2.34	1.54	4.99	3.18	99.86
70	3.55	2.73	1.79	5.83	3.71	116.50
80	4.05	3.12	2.05	6.66	4.24	133.14
90	4.56	3.51	2.30	7.49	4.77	149.79
100	5.07	3.90	2.56	8.32	5.30	166.43
110	5.57	4.29	2.81	9.15	5.83	183.07
120	6.08	4.68	3.07	9.99	6.36	199.72
130	6.59	5.07	3.33	10.82	6.89	216.36
TDN 47% (DMB)	88%	80%	76%	80%	84%	80%
Moisture 10%	13%	14%	11%	12%	11%	12%

Table 2. Breakeven values for selected grains at various alfalfa hay prices for beef cows at specified TDN and moisture levels.

Cost of prairie hay per ton	Corn/bu	Oats/bu	Barley/bu	Milo/cwt	Wheat/bu	Ear Corn/ton
50	2.17	1.67	1.09	3.56	2.27	71.11
60	2.60	2.00	1.31	4.27	2.72	85.33
70	3.03	2.34	1.53	4.98	3.17	99.56
80	3.46	2.67	1.75	5.69	3.62	113.78
90	3.90	3.00	1.97	6.40	4.08	128.00
100	4.33	3.34	2.19	7.11	4.53	142.22
110	4.76	3.67	2.40	7.82	4.98	156.44
120	5.20	4.00	2.62	8.53	5.44	170.67
130	5.63	4.34	2.84	9.24	5.89	184.89
140	6.06	4.67	3.06	9.96	6.34	199.11
150	6.50	5.00	3.28	10.67	6.80	213.33
160	6.93	5.34	3.50	11.38	7.25	227.56
TDN 55% (DMB)	88%	80%	76%	80%	84%	80%
Moisture 10%	13%	14%	11%	12%	11%	12%

Worksheet for evaluating feeding alternatives

	Example	Your etimate
BUY AND SHIP FEED		
Pounds of feed per head per day	30	_____
Days to be fed	300	_____
Number of head	200	_____
Total feed needed (tons)	900	_____
Less feed on hand	90	_____
Total feed needed (tons)	810	_____
Days of feed needed (810/200/30x2000)	270	_____
Price of feed per ton	$85	_____
Total feed expense	$68,850	_____
Shipping cost		
$2.90/mile X 300 miles X 810 tons /22 tons per load	$32,032	_____
Total cost of feed delivered to ranch	$100,882	_____
Yardage charge at ranch @ $.12/head/day	$6,480	_____
(Yardage covers time spent finding hay, tractor fuel, labor. etc.)		
Total cost of purchased feed and feeding cattle for 270 days	107,362	_____
BOARD CATTLE AT FEEDLOT		
Total feed needed (tons)		
(270 days X 30 Ibs X 200 head / 2000 Ibs/ton) *	810	_____
Price of feed at lot	$85.00	_____
Total feed expense	$68,850	_____
Cost of shipping cattle		
$3.25/mile X 600 miles X no. of cows/cows per load	$9,750	_____
Cost of feed and freight	$78,600	_____
Yardage charge at feedlot ($.22 per head per day)	$11,880	_____
Total cost of custom feeding	$90,480	_____

* Enter zero if feed is included in yardage charge.

NOTE: For comparison purposes, yardage charge at the ranch is only for the equivalent time the cattle would be at a feedlot. Also, because the number of loads of hay does not come out even for the number of days fed, there is some minor rounding error in the numbers.